

90189



901890



NEW ZEALAND QUALIFICATIONS AUTHORITY
MANA TOHU MĀTAURANGA O AOTEAROA

For Supervisor's use only

Level 1 Science, 2009

90189 Describe aspects of chemistry

Credits: Five

9.30 am Monday 23 November 2009

Check that the National Student Number (NSN) on your admission slip is the same as the number at the top of this page.

You should answer ALL the questions in this booklet.

If you need more space for any answer, use the page(s) provided at the back of this booklet and clearly number the question.

A Table of Ions and a Periodic Table are provided in Resource Booklet 90189R. Pull out the Resource Booklet from the centre of this booklet.

Check that this booklet has pages 2–7 in the correct order and that none of these pages is blank.

YOU MUST HAND THIS BOOKLET TO THE SUPERVISOR AT THE END OF THE EXAMINATION.

For Assessor's use only				Achievement Criteria	
Achievement		Achievement with Merit		Achievement with Excellence	
Describe aspects of chemistry.	<input type="checkbox"/>	Explain aspects of chemistry.	<input type="checkbox"/>	Discuss aspects of chemistry.	<input type="checkbox"/>
Overall Level of Performance					<input type="text"/>

You are advised to spend 40 minutes answering the questions in this booklet.

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QUESTION ONE: ATOMIC STRUCTURE

Some elements have isotopes. Isotopes of an element have the same number of protons, but different numbers of neutrons. Carbon-12 ($^{12}_6\text{C}$) and carbon-13 ($^{13}_6\text{C}$) are isotopes of carbon.

- (a) Explain why $^{12}_6\text{C}$ and $^{13}_6\text{C}$ are **neutral** atoms. You should describe their atomic structure, and state their electron configuration.

- (b) Explain how the particles within an atom contribute to its overall **mass**.

- Diagram(s) may be used to support your discussion.

This image shows a blank sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

Sodium metal is stored under oil. When it is taken out and cut in air, it is shiny but it very quickly goes dull.

In your answer:

- describe the atomic structure of sodium
- explain why sodium is stored in oil
- name the substance in air that the sodium reacts with
- write a word and balanced chemical equation to represent the reaction that occurs.

[illegible]

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QUESTION THREE : BALANCING IT UPAssessor's
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A student reacted zinc oxide with sulfuric acid, and wrote the following **incorrect** equation to represent the reaction:



The equation contains THREE errors.

- (a) Rewrite the equation so that it is a **correctly** balanced chemical equation.

- (b) Discuss the reasons for the three changes made to correctly balance the chemical equation.

A student carried out an experiment to **neutralise** sulfuric acid by adding sodium hydroxide to it.

In your answer include:

- an explanation of neutralisation in terms of an acid-base reaction
- the name of the indicator used
- observations that the student would make as the sodium hydroxide is added to the acid
- a word and balanced chemical equation for the reaction.

[illegible]

**Extra paper for continuation of answers if required.
Clearly number the question.**

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Question
number